PATENT SPECIFICATION

DRAWINGS ATTACHED

946,283

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Date of Application and filing Complete Specification: Nov. 22, 1962.

No. 44173/62.

Complete Specification Published: Jan. 8, 1964.

Index at acceptance:—Class A4, K3G.

International Classification:—A 46 b.

COMPLETE SPECIFICATION

Toothbrush

I, LAVERNE MARION COWAN, of 601, Locust Circle, Covington, Newton County, Georgia, United States of America, a citizen of the United States of America, do hereby declare the invention for which I pray that a patent may be granted to me and the method by which it is to be performed to be particularly described in and by the following statement.—

This invention relates to brushes for use in the oral cavity, and more particularly to toothbrushes.

In the past, many brushes have been developed to clean the teeth. Brushes found in the prior art have usually taken the form of a handle and head portion having a plurality of tufts of bristles inserted perpendicularly thereto. The tufts have been cut to various lengths to form profiles of convex, concave, or straight line configurations. Some of the prior art brushes have had longer tufts on one end so as to facilitate reaching certain difficult areas of the oral cavity. Most of these brushes have proper application to some areas of the teeth, but none of them is properly constructed for all areas of the oral cavity without complicated brushing technique.

At least one of the brushes in the prior art has been provided with tufts of bristles set at an angle to the head portion in an effort to reach all surfaces of the teeth. The principal difficulty with such prior art brush is that the tufts have the ends cut at an angle with respect to the axis of the tuft, more specifically at an angle which causes the bristles to slide along the buccal surfaces, as they approach the interproximals so as to lie substantially tangent to the teeth where they are substantially ineffective.

Prior art brushes are capable of a fair amount of cleaning; however, even this is possible only with intricate manipulation which must be learned through special training. It has been found that with most of the prior art brushes reasonably thorough cleaning of the teeth may be facilitated by using Charter's method, or vibratory technique. While these procedures often yield fair results, many people are not educated to use such methods, and many people, especially children, have much difficulty in trying to learn these methods. Moreover, they are time consuming for the dentists to teach and the patients to learn.

The brush of the present invention is so constructed that, with a more simple method of brushing the teeth, the bristles of the brush accomplish better cleaning than they would if the above described methods were used. This is made possible by providing a handle and head having tufts of bristles angularly disposed thereto, and the ends of the tufts being cut perpendicularly to the longitudinal axis of the tufts so as to permit a disposition of the bristles perpendicular to the tooth surface at the mesio-buccal, disto-buccal, mesio-lingual, disto-lingual, mesio-ladial and disto-ladial surfaces.

It should be realized that everything from the greatest contour of the tooth to the occlusal of the tooth would be more or less self cleansing and do not present a major problem in cleaning. This self cleansing is effected by normal tongue and cheek movements, and chewing and biting action. The problem, therefore, lies in cleaning the surfaces which such actions do not normally reach, and it is these surfaces which the brush of the present invention is primarily intended to clean.

It is, therefore, an object of the present invention to provide a brush which will effectively clean the teeth, especially at the mesio-buccal, disto-buccal, mesio-lingual, disto-lingual, mesio-ladial and disto-ladial surfaces.

It is another object of the present invention to provide a brush which has its action concentrated on the surfaces of the teeth which are most difficult to clean.

Another object of the present invention is to

provide a brush which may be used to clean the tongue and massage gingival tissue without causing trauma thereof.

And another object of the present invention is to provide a brush which will clean efficiently not only normal teeth but also teeth out of normal alignment, as well as orthodontic appliances.

Other and further objects of the present invention will become apparent from consideration of the following specification taken in conjunction with the accompanying drawing in which:

Fig. 1 is a side elevational view of one form of the present invention.

Fig. 2 is a plan view as seen from the bottom of Fig. 1.

Fig. 3 is an enlarged side elevational view of the head portion and bristles of the brush as shown in Fig. 1.

Fig. 4 is a much enlarged view of two opposing tufts of bristles, and showing the action of the bristles on the teeth.

Referring now to the drawings and to that particular embodiment chosen for illustration, it will be seen that the brush comprises a handle 10 having an elongated head portion 12 formed integrally therewith. Bristles, generally designated at 14, are mounted in the head portion 12, and are formed in tufts, as tufts 15. The tufts 15 are arranged in parallel rows 16, 16^1 longitudinally of the head 12 and inclined in the direction of the rows as pointed out below.

Though only two rows are here shown, the tufts of one row all being inclined in one direction and those of the other row in the opposite direction, it will be readily understood that additional rows may be provided if desired. The rows to be added will preferably continue to alternate in the direction of inclination; the third row will be like the first row; the fourth row will be like the second row, etc.

Attention is now directed to Fig. 3 which shows an enlarged view of the head 12 and bristles 14. The tufts of bristles are at an acute angle to the head 12, with the tufts of row 16 pointing toward the handle 10, and row 16^1 pointing away from the handle 10. The acute angle in each case should be about 70°. Since teeth do not have a flat surface, the angle may be varied somewhat; however, if it be less than about 60°, the bristles will lie too flat to give proper scrubbing action, and if the angle be more than about 80°, the bristles will be too nearly perpendicular to the head to give the effect to be hereinafter discussed.

The end plane 18 of each of the tufts of bristles is made by cutting the tufts perpendicularly to the axis of the tuft 15. Though the end plane is here shown as planar, it might be slightly concave to more nearly conform with the tooth.

The row 16 of tufts 15 is offset from row 16^1 so that the tufts of one row fully cross those of the other and the points of intersection of the tuft axes with their end planes lie substantially in right lines transverse to the rows and in a common plane. With this arrangement it will be seen that the ends of the tufts overlap somewhat as viewed from the side, the longitudinal axes of the tufts converging at the working ends, as shown in Fig. 3. It will be noted that the staggered arrangement and inclination of the tufts is such that a tuft in one row crosses a tuft in the adjacent row in X-fashion and then continues on to have its longitudinal axis converge at the working tip with the longitudinal axis of the tuft next adjacent to the aforementioned tuft in said adjacent row, the base and working tip of each tuft in any row being substantially midway between the bases of tufts in the adjacent row, all as shown in Figs. 1 and 3.

Attention is now directed to Fig. 4 for a better understanding of the brushing action involved. It should be realized that Fig. 4 shows the bristles at one instant. The brushing action is constantly changing, so the drawing must be considered only as one representative step in the action of the bristles.

The tufts 15 are shown in Fig. 3 under no pressure. The particular tufts 20, 21 in Fig. 4 are under slight pressure in the downward direction as shown in the drawing and are therefore distorted somewhat. The bristles of the tuft 21 approach the mesio-buccal surface 24a of the tooth 24 substantially perpendicular thereto so that substantially the entire flat working end of the tuft 21 engages the mesio-buccal surface of the tooth 24 for scrubbing action thereon as slight pressure causes the entire tuft 21 to spread somewhat; and, at the same time, the end of the tuft 20, likewise angled, but in the opposite direction, engages the disto-buccal surface 31a of tooth 31 for scrubbing action thereagainst. Upon back and forth movement of the brush, it will be seen that the bristles may move further into the interproximal 26 for thorough cleaning as the brush is moved up and down on the teeth. Since the tufts are at an angle other than 90° to the head of the brush the tufts are respectively substantially perpendicular to the mesio-buccal and disto-buccal surfaces of the teeth, and the ends of the tufts lying normal to the longitudinal axes of the tufts are properly positioned for maximum scrubbing action on these tooth surfaces.

Bristles of the type used on toothbrushes do their best scrubbing on the end of the bristle rather than on the side. The tufts on the brush of the present invention are so formed that the ends of the tufts are normal to the mesio-buccal, disto-buccal, mesio-lingual, disto-lingual, mesio-ladial and disto-ladial surfaces of the tooth, which are the

main areas that are not self-cleansing. However, with a sweeping action on the tongue and gingival tissue, the tufts will slide over the surface, since the tissue surfaces are relatively flat. Therefore, the action of the brush on tongue and gingival tissue is very gentle, and of a sweeping nature and will not cause trauma.

With the foregoing in mind, it will be understood that the present brush may be used in the conventional manner of brushing, sweeping in a straight line from gum towards the end of the teeth. The angular disposition of the bristles will cause the tufts to reach to the interproximals, and the tips will remain more or less perpendicular to the surfaces difficult to clean. This holds true whether the brush be used on the buccal aspect or the lingual aspect. In either case the bristles will concentrate their most effective scrubbing action on the mesio-buccal, disto-buccal, mesio-lingual, disto-lingual, mesio-ladial and disto-ladial surfaces while still acting on the buccal, lingual and occlusal surfaces sufficiently to clean them.

It will therefore be seen that the present invention provides a brush which will clean teeth more effectively and without special intricate manipulation of the brush. Even children and dentally uneducated adults may use the brush with excellent results for its cleaning action is superior to that of the prior art brushes.

It will be readily understood by those skilled in the art that the brush herein depicted is by way of illustrating the general concept of the invention, and is not meant to be restrictive.

WHAT I CLAIM IS:—

1. A brush for use in the oral cavity comprising a handle, a head formed on one end of said handle, and a plurality of uniform height tufts of bristles mounted on said head and forming an angle of approximately 70° with the longitudinal axis of said head, the ends of the bristles of each tuft lying substantially in a plane to which the axis of the tuft is perpendicular, said tufts of bristles being arranged in rows longitudinally of said head with the tufts in one row inclined in one direction and the tufts in an adjacent row inclined in the opposite direction, the bases of said tufts being mounted out of alignment transversely of said head and staggered so that a tuft in said one row crosses an adjacent tuft in said adjacent row in X-fashion and then continues on to have its longitudinal axis converge at the working tip with the longitudinal axis of the tuft next adjacent to said adjacent tuft in said adjacent row.

2. A brush for use in the oral cavity comprising a handle, a head formed on one end of said handle, and a plurality of uniform height tufts of bristles mounted on said head and forming an angle of approximately 70° with the longitudinal axis of said head, the ends of the bristles of each tuft lying substantially in a plane to which the axis of the tuft is perpendicular, said tufts of bristles being arranged in rows longitudinally of said head with the tufts in one row inclined in one direction and the tufts in an adjacent row inclined in the opposite direction, the bases of the said tufts being mounted out of alignment transversely of said head and staggered so that a tuft in said one row crosses an adjacent tuft in said adjacent row X-fashion and then continues on to partially overlap at the working tip with the working tip of the tuft next adjacent to said adjacent tuft in said adjacent row.

3. A brush for use in the oral cavity comprising a handle, a head formed on one end of said handle, and a plurality of uniform height tufts of bristles mounted on said head and forming an angle of approximately 70° with the longitudinal axis of said head, the ends of the bristles of each tuft lying substantially in a plane to which the axis of the tuft is perpendicular, said tufts of bristles being arranged in rows longitudinally of said head with the tufts in one row inclined in one direction and the tufts in an adjacent row inclined in the opposite direction, the basis of said tufts being mounted out of alignment transversely of said head and staggered so that a tuft in said one row crosses an adjacent tuft in said adjacent row in X-fashion and then continues on so as to converge toward the end portion of the tuft next adjacent to said adjacent tuft in said adjacent row, the end of said tuft in said one row and the end of said next adjacent tuft in said adjacent row terminating in mutually cooperative relation adjacent a transverse vertical plane passing therebetween.

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Leamington Spa: Printed for Her Majesty's Stationery Office, by the Courier Press (Leamington) Ltd.—1964. Published by The Patent Office, 25 Southampton Buildings, London, W.C.2, from which copies may be obtained.

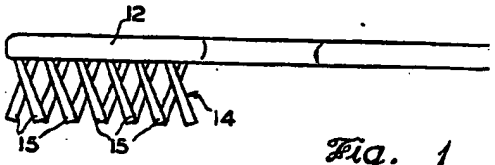

Fig. 1

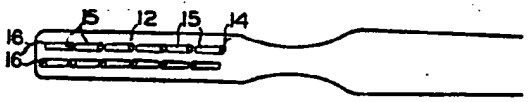

Fig. 2

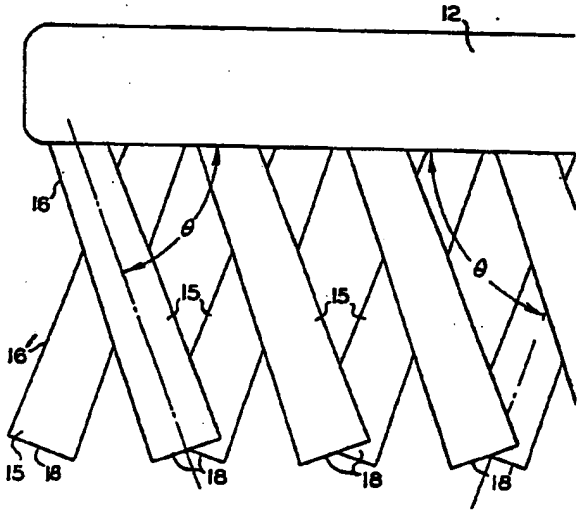

Fig. 3

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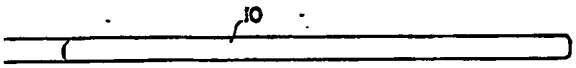

Fig. 1

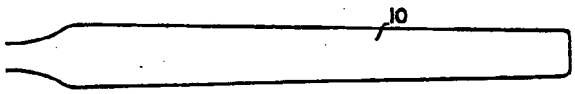

Fig. 2

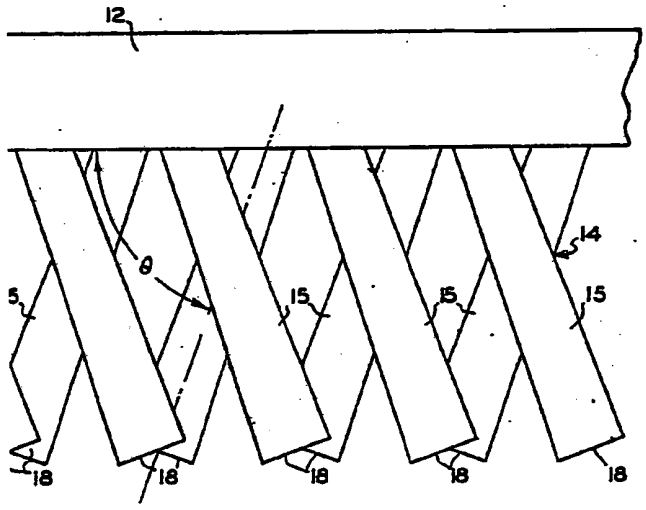

Fig. 3

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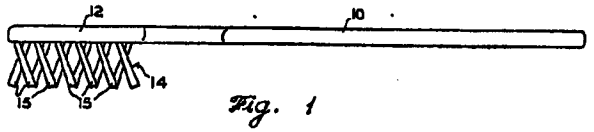

Fig. 1

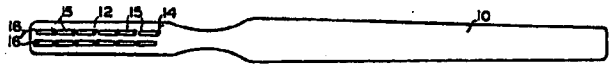

Fig. 2

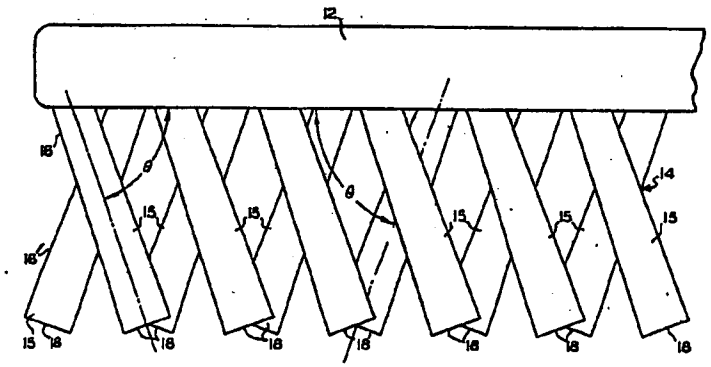

Fig. 3

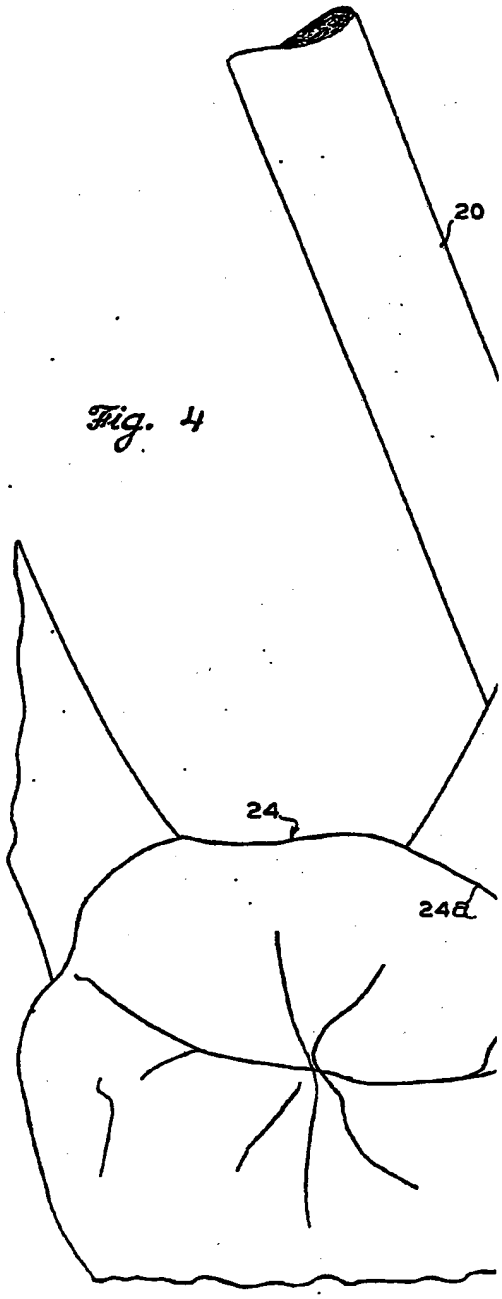

Fig. 4

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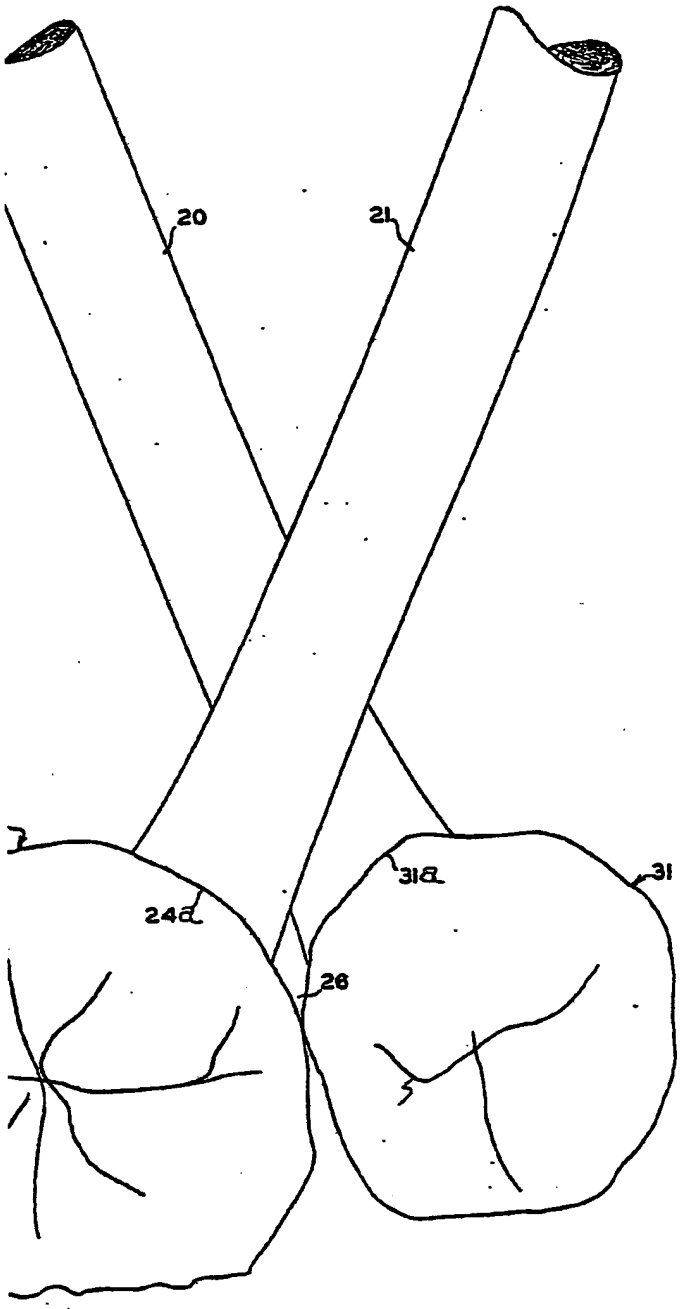
Sheet 2



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Sheet 2

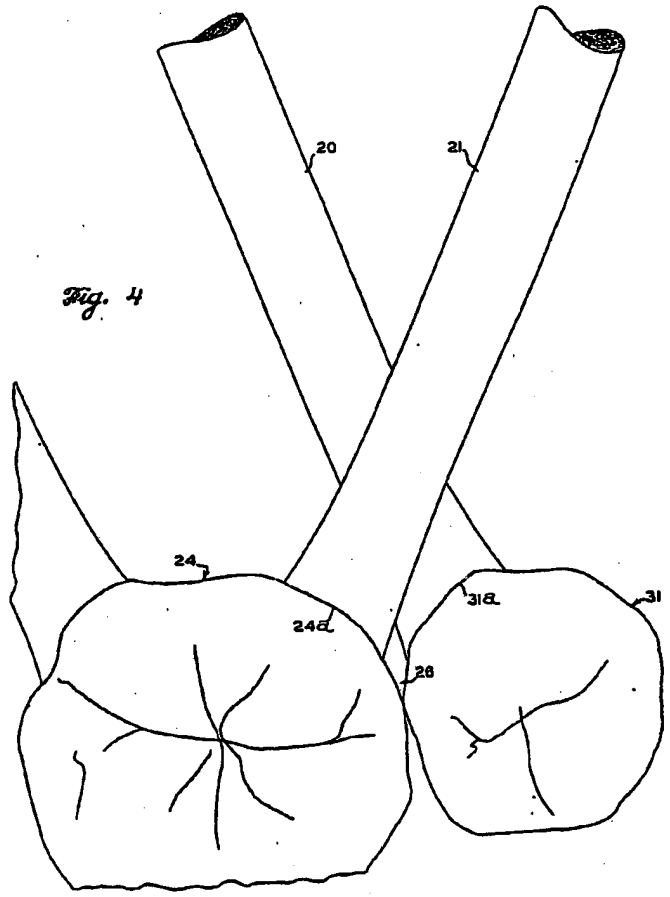

Fig. 4